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EXAMINER
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MCCLELLAND, KIMBERLY KEIL

ART UNIT	PAPER NUMBER
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1791

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/826,816	<b>Applicant(s)</b> CREDELLE ET AL.	
	<b>Examiner</b> KIMBERLY K. MCCLELLAND	<b>Art Unit</b> 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11/21/08.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 and 25-29 is/are pending in the application.
- 4a) Of the above claim(s) 48-53 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 and 25-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/21/08 has been entered.

### ***Priority***

2. The current application is a continuation in part of parent application 09/932,409, with claims which are unsupported by the parent application. Examples of the subject matter in the claims of the current application but not disclosed in the parent application include: a moving mechanism, a substrate forming station, a detachment station, etc. Consequently, the current application has been afforded the effective filing date of parent application 10/144,166 filed 05/10/2002. When applicant files a continuation-in-part whose claims are not supported by the parent application, the effective filing date is the filing date of the child CIP. The later-filed application must be an application for a patent for an invention which is also disclosed in the prior application (the parent or original nonprovisional application or provisional application). The disclosure of the invention in the parent application and in the later-filed application must be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. 112. See *Transco*

*Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994). Consequently, the current claims have not been afforded the priority date of 02/05/1999 as supplied by applicant, due to the lack of support in application No. 09/932,409 of the currently claimed subject matter. Any prior art disclosing the invention or an obvious variant thereof having a critical reference date more than 1 year prior to the filing date of the child will bar the issuance of a patent under 35 U.S.C. 102(b). *Paperless Accounting v. Bay Area Rapid Transit System*, 804 F.2d 659, 665, 231 USPQ 649, 653 (Fed. Cir. 1986).

### ***Response to Amendment***

3. Applicant is reminded they need to explicitly point out where support for all the newly claimed features comes from as required by MPEP 714.02 and 2163.06. See 37 CFR 1.111.

### ***Claim Objections***

4. Claims 17-18 objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. "A means for heating" recited in independent claim 16 is being treated under 35 U.S.C. 112, sixth paragraph. As such, it is unclear how the heating and curing devices in claims 17-18 further limit independent claim 16.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-23 and 25-29 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Independent claims 1, 16, 19, 23, and 28 have been amended to include the phrase, "fluid assembly environment", which does not appear in the current specification. This feature appears to be new matter. The drawings are not disclosed as illustrating a fluid assembly environment. Clarification is required.

7. Claims 1-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Independent claims 1 and 16 have been amended to include the phrase, "mobile", which does not appear in the current

specification. This feature appears to be new matter. The drawings are not disclosed as illustrating a mobile relocating tool. Clarification is required.

8. Dependent claims 2-15, 17-18, 20-22, 25-27, and 29 are rejected due to dependency on independent claims 1, 16, 19, 23, and 28.

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 1-23 and 25-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what structural features are recited by the currently claimed "fluid assembly environment". What structural features of the current apparatus are required to constitute a fluid assembly environment? It is unclear what features of a fluid assembly environment are intended use recitations, and which are structural. Does the environment include a fluid? Does the environment require functional blocks? Does the environment require a tank? Is air an acceptable fluid? Clarification is required. For the purposes of examination, examiner assumes the phrase "fluid assembly environment" only requires a liquid fluid. Dependent claims 2-15, 17-18, 20-22, 25-27, and 29 are rejected due to dependency on independent claims 1, 16, 19, 23, and 28.

11. The term "high enough" in claim 16 is a relative term which renders the claim indefinite. The term "high enough" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in

the art would not be reasonably apprised of the scope of the invention. The phrase "high enough temperature" appears to be a method step of the current apparatus. Clarification is required. Claims 17-18 are rejected due to dependency on independent claim 16.

12. Claim 19 recites the limitation "said relocating tool" in lines 11-12. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 1 and 6-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,155,895 to Jakiela et al. in view of International Patent Application Publication No. WO 00/46854 to Jacobsen et al. and U.S. Patent No. 6,551,048 to Bayan et al.

15. With respect to claim 1, Jakiela et al. discloses an automatic assembly apparatus, including a mobile relocating tool (10) having a first plurality of receptor sites for depositing a plurality of functional blocks therein, wherein at least one of said receptor sites is a recessed region (18) within said relocating tool, the recessed region designed to closely fit at least a portion of a single functional block; a moving mechanism (12) coupled to the relocating tool (10) to move the relocating tool to

another environment; and a transfer tool (i.e. robotic arm; column 6, lines 49-55).

Jakiela et al. does not specifically disclose a fluid assembly environment, or a plurality of nozzles which are positioned relative to each other so that the plurality of nozzles are in alignment with said first plurality of receptor.

16. Jacobsen et al. discloses an apparatus for forming assemblies, including a fluid assembly environment is preferable over prior art placement techniques (page 4, second complete paragraph). It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the fluid assembly environment taught by Jacobsen et al. for the dumping and vibrating placement environment disclosed by Jakiela et al. The motivation would have been to reduce damage inflicted on the workpieces during vibration into their respective cavities.

17. Bayan et al. discloses an off-load system for semiconductor devices, including a plurality of nozzles which are positioned relative to each other so that the plurality of nozzles are in alignment with said first plurality of receptor (4; See Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the plurality of nozzles in the transfer tool taught by Bayan et al. for the transfer tool of Jakiela et al. The motivation would have been to allow for simultaneous transfer of multiple devices, thus improving unit output.

18. Examiner notes the phrases, "sites for depositing a plurality of functional blocks therein", "for depositing said functional blocks into the first plurality of receptor sites", "to move the relocating tool from the a fluidic assembly environment to another environment", and "being able to remove said plurality of functional blocks from said



relocating tool and deposit said plurality of functional blocks into a second plurality of receptor sites in said substrate” are considered a recitation of the intended use of the currently claimed apparatus. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. In *re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997); “[A]pparatus claims cover what a device is, not what a device does.” *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original). A claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). See MPEP § 2114.

19. As to claim 6, Jakiela et al. does not specifically disclose second plurality of receptor sites being configured to mate with said plurality of functional blocks.

20. Bayan et al. discloses an off-load system for semiconductor devices, including the second plurality of receptor sites being configured to mate with said plurality of functional blocks (See Figure 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the mating second receptor sites taught by Bayan et al. in the apparatus of Jakiela et al. The motivation would have been to provide alignment and stability to the transferred blocks.

21. As to claim 7, Jakiela et al. discloses said plurality of receptor sites have any one of a trapezoidal shape, a rectangular shape, a square shape, and a cylindrical shape (See Figure 1)

22. The shape of the functional blocks is interpreted as the material being acted upon in the apparatus. Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969). Consequently, this limitation has not been given patentable weight.

23. As to claim 8, Jakiela et al. discloses the functional blocks and receptor sites may have an asymmetrical shape (column 4, lines 25-35).

24. As to claim 9, Jakiela et al. does not specifically disclose transfer tool (i.e. robotic arm; column 6, lines 49-55) is further coupled to a vacuum source conveying vacuum to said nozzles.

25. Bayan et al. discloses an off-load system for semiconductor devices, including a plurality of nozzles which are positioned relative to each other so that the plurality of nozzles operated by a vacuum (4; See Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the plurality of nozzles in the transfer tool taught by Bayan et al. for the transfer tool of Jakiela et al. The motivation would have been to allow for simultaneous transfer of multiple devices, thus improving unit output.

26. As to claim 10, Jakiela et al. discloses all of said first plurality of receptor sites have same dimensions and shapes (See Figure 1).

27. As to claim 11, Jakiela et al. does not specifically disclose said first plurality of receptor sites comprises of different size and shape receptor sites.

28. Bayan et al. discloses an off-load system for semiconductor devices, including said first plurality of receptor sites comprises of different size and shape receptor sites (column 5, lines 29-50). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the different size and shape receptor sites taught by Bayan et al. with the receptor sites of Jakiela et al. The motivation would have been to allow various sized blocks to be positioned in various orientations.

29. As to claim 12, Jakiela et al. does not specifically disclose said plurality of nozzles has a dimension that is smaller than a dimension of said plurality of functional blocks.

30. Bayan et al. discloses an off-load system for semiconductor devices, including a plurality of nozzles has a dimension that is smaller than a dimension of said plurality of functional blocks (4; See Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the plurality of nozzles in the transfer tool taught by Bayan et al. for the transfer tool of Jakiela et al. The motivation would have been to allow for simultaneous transfer of multiple devices, thus improving unit output.

31. As to claim 13, Jakiela et al. does not specifically disclose said plurality of functional blocks are deposited in said relocating tool by an FSA device using a slurry to deposit said plurality of functional blocks into said plurality of receptor sites.

32. Jacobsen et al. discloses an apparatus for forming assemblies, including a fluid assembly environment using a slurry to deposit said plurality of functional blocks into said plurality of receptor sites is preferable over prior art placement techniques (page 4, second complete paragraph). It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the fluid assembly environment taught by Jacobsen et al. for the dumping and vibrating placement environment disclosed by Jakiela et al. The motivation would have been to reduce damage inflicted on the workpieces during vibration into their respective cavities.

33. As to claim 14, Jakiela et al. discloses a drying device (column 8, lines 9-14).

34. As to claim 15, Jakiela et al. discloses a curing device (column 8, lines 9-14).

35. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,155,895 to Jakiela et al. in view of International Patent Application Publication No. WO 00/46854 to Jacobsen et al. and U.S. Patent No. 6,551,048 to Bayan et al. as applied to claims 1, and 6-15 above, and further in view of U.S. Patent No. 6,193,136 to Higashi et al.

36. With respect to claim 2, Jakiela et al. does not disclose a vibration device coupling to said transfer tool to agitate said transfer tool as said plurality of functional blocks are being deposited into said second plurality of receptor sites.

37. Higashi et al. discloses a component mounting apparatus, including a vibration device coupling to said transfer tool to agitate said transfer tool as said plurality of functional blocks are being deposited into said second plurality of receptor sites (column

7, lines 33-63). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the vibratory device taught by Higashi et al. with the transfer tool disclosed by Jakiela et al. The motivation would have been to allow for ultrasonic bonding of functional blocks to a substrate (column 3, lines 25-29).

38. Claims 3, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,155,895 to Jakiela et al. in view of International Patent Application Publication No. WO 00/46854 to Jacobsen et al. and U.S. Patent No. 6,551,048 to Bayan et al. as applied to claims 1, and 6-15 above, and further in view U.S. Patent No. 6,742,561 to Nam et al.

39. With respect to claim 3, Jakiela et al. does not specifically disclose an adhesive dispensing device to dispense adhesive into said second plurality of receptor sites in said substrate before said plurality of functional blocks are deposited into said second plurality of receptor sites.

40. As to claim 3, Nam et al. discloses an adhesive dispensing device (74) to dispense adhesive (68) into said second plurality of receptor sites in said substrate before said plurality of functional blocks are deposited into said second plurality of receptor sites (See Figure 4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the adhesive dispensing device taught by Nam et al. with the apparatus of Jakiela et al. The motivation would have been to secure the blocks in their desired location and prevent further repositioning of the blocks.

41. With respect to claim 16, Jakiela et al. discloses an automatic assembly apparatus, including a mobile relocating tool (10) having a first plurality of receptor sites for depositing a plurality of functional blocks therein, wherein at least one of said receptor sites is a recessed region (18) within said relocating tool, the recessed region designed to closely fit at least a portion of a single functional block; a moving mechanism (12) coupled to the relocating tool (10) to move the relocating tool to another environment; and a transfer tool (i.e. robotic arm; column 6, lines 49-55), and a means of heating said substrate to a high enough temperature (column 8, lines 9-14). Jakiela et al. does not specifically disclose a fluid assembly environment, a plurality of nozzles which are positioned relative to each other so that the plurality of nozzles are in alignment with said first plurality of receptor, or a substrate made out of a thermoset material.

42. Jacobsen et al. discloses an apparatus for forming assemblies, including a fluid assembly environment is preferable over prior art placement techniques (page 4, second complete paragraph). It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the fluid assembly environment taught by Jacobsen et al. for the dumping and vibrating placement environment disclosed by Jakiela et al. The motivation would have been to reduce damage inflicted on the workpieces during vibration into their respective cavities.

43. Bayan et al. discloses an off-load system for semiconductor devices, including a plurality of nozzles which are positioned relative to each other so that the plurality of nozzles are in alignment with said first plurality of receptor (4; See Figure 1). It would

have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the plurality of nozzles in the transfer tool taught by Bayan et al. for the transfer tool of Jakiela et al. The motivation would have been to allow for simultaneous transfer of multiple devices, thus improving unit output.

44. Nam et al. discloses an apparatus for die bonding, including said substrate is made out of a thermoset material (column 2, lines 7-14; See Figure 4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the thermoset material of the substrate taught by Nam et al. with the apparatus of Jakiela et al. The motivation would have been to secure the blocks in their desired location and prevent further repositioning of the blocks.

45. As to claim 17, Jakiela et al. discloses a heating device capable of heating said substrate to above a softening point (column 8, lines 9-14).

46. As to claim 18, Jakiela et al. discloses a curing device (column 8, lines 9-14).

47. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,155,895 to Jakiela et al. in view of International Patent Application Publication No. WO 00/46854 to Jacobsen et al. and U.S. Patent No. 6,551,048 to Bayan et al. as applied to claims 1, and 6-15 above, and further in view of U.S. Patent No. 6,261,871 to Langari et al.

48. With respect to claim 4, Jakiela et al. does not specifically disclose a micro liquid dispensing device to dispense droplets of fluid-over said second plurality of receptor

sites before said plurality of functional blocks are deposited into said second plurality of receptor sites.

49. Langari et al. discloses an apparatus for making flip-chips, including a micro liquid dispensing device to dispense droplets of fluid-over said second plurality of receptor sites before said plurality of functional blocks are deposited into said second plurality of receptor sites (column 8, lines 5-13). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the liquid dispensing device taught by Langari et al. with the apparatus disclosed by Jakiela et al. The motivation would have been to remove any contaminants and produce a stronger adhesion between the substrate and functional elements (column 8, lines 5-13).

50. As to claim 5, Jakiela et al. does not specifically disclose a micro liquid dispensing device to dispense droplets of fluid-over said second plurality of receptor sites before said plurality of functional blocks are deposited into said second plurality of receptor sites.

51. Langari et al. discloses an apparatus for making flip-chips, including a micro liquid dispensing device to dispense droplets of fluid-over said second plurality of receptor sites before said plurality of functional blocks are deposited into said second plurality of receptor sites (column 8, lines 5-13). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the liquid dispensing device taught by Langari et al. with the apparatus disclosed by Jakiela et al. The motivation would have been to remove any contaminants and produce a stronger adhesion between the substrate and functional elements (column 8, lines 5-13).



52. Claims 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,155,895 to Jakiela et al. in view of International Patent Application Publication No. WO 00/46854 to Jacobsen et al. and U.S. Patent No. 6,551,048 to Bayan et al. as applied to claims 1, and 6-15 above, and further in view of U.S. Patent No. 5,765,277 to Jin et al.

53. With respect to claim 19, Jakiela et al. discloses an automatic assembly apparatus, including a mobile relocating tool (10) having a first plurality of receptor sites for depositing a plurality of functional blocks therein, wherein at least one of said receptor sites is a recessed region (18) within said relocating tool, the recessed region designed to closely fit at least a portion of a single functional block;; and a transfer tool (i.e. robotic arm; column 6, lines 49-55), and a means of heating said substrate to a high enough temperature (column 8, lines 9-14). Jakiela et al. does not specifically disclose a fluid assembly environment, a plurality of nozzles, or a transfer station to invert said plurality of functional blocks.

54. Jacobsen et al. discloses an apparatus for forming assemblies, including a fluid assembly environment is preferable over prior art placement techniques (page 4, second complete paragraph). It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the fluid assembly environment taught by Jacobsen et al. for the dumping and vibrating placement environment disclosed by Jakiela et al. The motivation would have been to reduce damage inflicted on the workpieces during vibration into their respective cavities.

55. Bayan et al. discloses an off-load system for semiconductor devices, including a plurality of nozzles which are positioned relative to each other so that the plurality of nozzles are in alignment with said first plurality of receptor (4; See Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the plurality of nozzles in the transfer tool taught by Bayan et al. for the transfer tool of Jakiela et al. The motivation would have been to allow for simultaneous transfer of multiple devices, thus improving unit output.

56. Jin et al. discloses a transfer tool (51/53), said transfer tool to remove a plurality of functional blocks (57) formed on a first substrate (50) from said first substrate; a transfer station to invert (52) said plurality of functional blocks; and wherein said transfer tool (51/53) to pick up inverted functional blocks and deposit said inverted functional blocks onto a second substrate having a plurality of receptor sites (column 4, lines 23-30; See Figure 5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the transfer station taught by Jin et al. with the device of Jakiela et al. The motivation would have been to allow the functional block to have an acting face turned from upward to downward (or from downward to upward) to form adequate connections in the final manufactured product.

57. As to claim 20, Jakiela et al. does not specifically disclose a second transfer tool is used to pick up a inverted functional blocks and deposit said inverted blocks onto said second substrate having a plurality of receptor sites.

58. Jin et al. discloses a second transfer tool (53) is used to pick up a inverted functional blocks and deposit said inverted blocks onto said second substrate having a

plurality of receptor sites (See Figure 5).. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the second transfer tool taught by Jin et al. with the device of Jakiela et al. The motivation would have been to allow the functional block to have an acting face turned from upward to downward (or from downward to upward) to form adequate connections in the final manufactured product. However, Jin et al. does not specifically disclose a plurality of nozzles on the second transfer tool

59. Bayan et al. discloses an off-load system for semiconductor devices, including a plurality of nozzles which are positioned relative to each other so that the plurality of nozzles are in alignment with said first plurality of receptor (4; See Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the plurality of nozzles in the transfer tool taught by Bayan et al. for the transfer tool of Jakiela et al. The motivation would have been to allow for simultaneous transfer of multiple devices, thus improving unit output.

60. As to claim 21, Jakiela et al. does not specifically disclose said plurality of receptor sites has a matching pattern with said plurality of nozzles on said transfer tool.

61. Bayan et al. discloses an off-load system for semiconductor devices, including said plurality of receptor sites (40) has a matching pattern with said plurality of nozzles on said transfer tool (4; See Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the plurality of nozzles in the transfer tool taught by Bayan et al. for the transfer tool of Jakiela et al. The

motivation would have been to allow for simultaneous transfer of multiple devices, thus improving unit output.

62. As to claim 22, Jakiela et al. does not specifically disclose said plurality of receptor sites has a matching pattern with said another plurality of nozzles on said another transfer tool.

63. Jin et al. discloses a second transfer tool (53) is used to pick up a inverted functional blocks and deposit said inverted blocks onto said second substrate having a plurality of receptor sites (See Figure 5).. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the second transfer tool taught by Jin et al. with the device of Jakiela et al. The motivation would have been to allow the functional block to have an acting face turned from upward to downward (or from downward to upward) to form adequate connections in the final manufactured product. However, Jin et al. does not specifically disclose a plurality of nozzles on the second transfer tool

64. Bayan et al. discloses an off-load system for semiconductor devices, including said plurality of receptor sites (40) has a matching pattern with said another plurality of nozzles on said another transfer tool (4; See Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the plurality of nozzles in the transfer tool taught by Bayan et al. for the transfer tool of Jakiela et al. The motivation would have been to allow for simultaneous transfer of multiple devices, thus improving unit output.

65. Claims 23 and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,551,048 to Bayan et al. in view of International Patent Application Publication No. WO 00/46854 to Jacobsen et al. and U.S. Patent No. 6,830,946 to Yanagisawa et al.

66. With respect to claim 23, Bayan et al. discloses an off-load system for semiconductor devices, including a transfer tool with multiple nozzles which are in alignment with said first plurality of receptor sites in the transfer tool (4; See Figure 1). Bayan et al. does not specifically disclose a fluid assembly environment, a substrate forming station, or a detachment station.

67. Jacobsen et al. discloses an apparatus for forming assemblies, including a fluid assembly environment is preferable over prior art placement techniques (page 4, second complete paragraph). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the fluid assembly environment taught by Jacobsen et al. to form the matrix in the off-loading system disclosed by Bayan et al. The motivation would have been to accurately place devices in the matrix at a specific alignment pattern.

68. Yanagisawa et al. discloses device transfer panel, including a carrier (5) on the opposite side of the functional layer (6), forming a second substrate (11), and a detachment station for detaching the carrier (5) from the functional layer (See Figures 1A-3C). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the carrier and second substrate taught by Yanagisawa et al. with the system of Bayan et al. The motivation would have been to provide

support for the functional layer prior to attachment and provide further protection for the electronic article.

69. As to claim 25, the composition of the functional layer composition is interpreted as the material being acted upon in the apparatus. Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969). Consequently, this limitation has not been given patentable weight.

70. As to claim 26, Bayan et al. does not specifically disclose a pattern vias forming station for forming contact vias created in the bottom side of the photopatternable layer for electrical interconnections to the plurality of blocks.

71. Yanagisawa et al. discloses device transfer panel, including a pattern vias forming station for forming contact vias created in the bottom side of the photopatternable layer for electrical interconnections to the plurality of blocks (5; See Figures 4A-4C). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide vias in the functional layer as taught by Yanagisawa et al. The motivation would have been to provide electrical connection between the functional block and substrate, allowing the resulting device to function. The phrase, "after the carrier has been detached" directed to functional language. It is the examiner's position that Yanagisawa et al. meets the limitations of the instant claims. If the applicant were to establish that significant structural differences exist with the prior art apparatus which would make it incapable of performing the evacuation step and

amend the claims appropriately, the art rejection over the apparatus claims will be withdrawn.

72. As to claim 27, the composition of the functional layer composition is interpreted as the material being acted upon in the apparatus. Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969). Consequently, this limitation has not been given patentable weight.

73. Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,503,356 to Sakai et al. in view of International Patent Application Publication No. WO 00/46854 to Jacobsen et al.

74. With respect to claim 28, Sakai et al. discloses an apparatus for chip processing, including mobile relocating tool (i.e. arranging apparatus) having a first plurality of receptor sites for depositing having a plurality of functional blocks deposited therein (column 6, lines 49-67), the recessed region designed to closely fit at least a portion of a single functional block; and a transfer tool (26) coupling to an adhesive layer (22) said transfer tool to transfer said plurality of functional blocks from said relocating tool to a substrate (31) wherein said plurality of functional blocks adhere to said adhesive layer, wherein the transfer tool comprises a plurality of attachment sites positioned relative to each other that comprises the same relative positions as the plurality of receptor sites in the relocating tool, and the same relative positions as deposition sites on the substrate upon which a plurality of functional blocks are to be deposited (see Figures 1-4).

However, Boyd et al. does not specifically disclose at least one of said receptor sites are a recessed region within said relocating tool, a fluid assembly environment for depositing said functional blocks into the first plurality of receptor sites or a moving mechanism coupled to the relocating tool to move the relocating tool from the a fluidic assembly environment to another environment.

75. Jacobsen et al. discloses an apparatus for forming assemblies, including a fluid assembly environment is preferable over prior art placement techniques (page 4, second complete paragraph). Jacobsen et al. also discloses at least one of said receptor sites are a recessed region within said relocating tool (See Figure 7B) and a moving mechanism coupled to the relocating tool to move the relocating tool from the a fluidic assembly environment to another environment (See Figure 15B). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the fluid assembly environment taught by Jacobsen et al. to form the matrix in the arranging apparatus disclosed by Sakai et al. The motivation would have been to accurately place devices in the matrix at a specific alignment pattern.

76. As to claim 29, Sakai et al. discloses a vacuum source coupling to said transfer tool (26), said vacuum source adheres said adhesive layer (22) to said transfer tool (26).

77. The current application being a continuation-in-part of an earlier U.S. application or international application containing subject matter not supported by the original application. Any claims in the new application not supported by the specification and



claims of the parent application have an effective filing date equal to the filing date of the new application. Any claims which are fully supported under 35 U.S.C. 112 by the earlier parent application have the effective filing date of that earlier parent application.

### ***Response to Arguments***

78. Applicant is reminded they need to explicitly point out where support for all the newly claimed features comes from as required by MPEP 714.02 and 2163.06. See 37 CFR 1.111.

79. Applicant's arguments with respect to claims 1-23 and 25-29 have been considered but are moot in view of the new ground(s) of rejection. Applicant's remaining pertinent remarks are addressed below:

80. Regarding applicant's argument of duplicate rejections, examiner notes the current claims include 28 total claims and 5 independent claims. The various rejections are necessary to individually address every feature described in the current claims. When dependent claims are drawn to mutually exclusive features, a separate rejection of each claim often requires a separate rejection of the independent claim as well. The various features and combinations disclosed in each unique claim must be addressed by a separate, unique rejection. In the current case, the best available art required to meet a dependent claim may potentially result in an additional rejection of an independent claim. Consequently, the current rejection specifically cites the best available art.

81. In light of applicant's arguments regarding the rejection of claim 1 under Hadley, the rejection has been withdrawn.

82. Applicant's current amendment is sufficient to overcome the previous rejections under 35 U.S.C. 103. However, new rejections under 35 U.S.C. 103 have been issued.

83. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

84. In response to applicant's arguments regarding the priority date of the current claims, examiner notes the current application is a continuation-in-part of an earlier U.S. application or international application containing subject matter not supported by the original application. Any claims in the new application not supported by the specification and claims of the parent application have an effective filing date equal to the filing date of the new application. Each claim as a whole is afforded a prior art date, and any subject matter not supported by the parent application results in an effective filing date equal to the filing date of the new application. Therefore, Bayan constitutes prior art available under 35 U.S.C. 102 (e).

85. As to applicant's arguments regarding the relative positioning of the blocks on the substrate, examiner notes the current claims are drawn to an apparatus, not a method. The currently claimed apparatus does not positively recite a final receptor substrate, the substrate is only included in the functional language describing the intended use of the

transfer tool. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

86. As to applicant's arguments regarding Higashi, this argument is not persuasive. Higashi's disclosure of a transfer tool including a vibration device for ultrasonic bonding inherently agitates the transferred devices. Applicant's assertion that a difference exists structurally between an agitating vibration device and a bonding vibration device is not persuasive. Applicant states the two devices are "dramatically different", yet does not give a single structural example of how these devices are different. Consequently, this argument is not persuasive.

87. In response to applicant's argument that Nam and Jin are drawn to a different process, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

### ***Conclusion***

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KIMBERLY K. MCCLELLAND whose telephone number is (571)272-2372. The examiner can normally be reached on 8:00 a.m.-5 p.m. Mon-Thr.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Philip C. Tucker can be reached on (571)272-1095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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